

(105), so as always to form the positive pole, and at the same time retain a perpendicular position, that it might rest, with its whole weight,, upon the test paper to be employed. The test paper itself was supported upon a platina spatula, connected either with the discharging train (28), or with the negative wire of the voltaic apparatus, and it consisted of four thick-nesses, moistened at all times to an equal degree in a standard solution of hydriodate of potassa (52).

no. When the platina wire was connected with the conductor of the machine, and the spatula with the discharging train, ten turns of the machine had such decomposing power as to produce a pale round spot of iodine of the diameter of the wire; twenty turns made a much darker mark, and thirty turns made a dark brown spot penetrating to the second thickness of the paper. The difference in effect produced by two or three turns, more or less, could be distinguished with facility.

in. The wire and spatula were then connected with the voltaic apparatus (105), the galvanometer being also included in the arrangement; and, a stronger acid having been prepared, consisting of nitric acid and water, the voltaic apparatus was immersed so far as to give a permanent deflection of the needle to the 5J division (108), the fourfold moistened paper intervening as before.¹ Then by shifting the end of the wire from place to place upon the test paper, the effect of the current for five, six, seven, or any number of the beats of the watch (105)

was observed, and compared with that of the machine. After alternating and repeating the experiments of comparison man}' times, it was constantly found that this standard current of voltaic electricity, continued for eight beats of the watch, was equal, in chemical effect, to thirty turns of the machine; twenty-eight revolutions of the machine were sensibly too few.

112. Hence it results that both in *magnetic deflection* (107)

and in *chemical force*, the current of electricity of the standard voltaic battery for eight beats of the watch was equal to that of the machine evolved by thirty revolutions.

113. It also follows that for this case of electro-chemical decomposition, and it is probable for all cases, that the *chemical power, like the magnetic force* (102), *is in direct proportion to the absolute quantity of electricity* which passes.

114. Hence arises still further confirmation, if any were required, of the identity of common and voltaic electricity,

¹ Of course the heightened power of the voltaic battery was necessary to compensate for the bad conductor now interposed.